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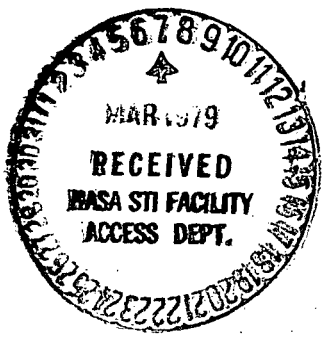

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TEST ENGINES PROMISE LESS NOISE FROM SMALL AIRCRAFT

Two experimental engines designed to significantly reduce the noise and pollutant emissions of general aviation aircraft are being developed by the National Aeronautics and Space Administration.

Flyover noise levels, compared to the quietest current business jets, are predicted to be about 10 decibels lower for one research engine and about 14 decibels lower for the other engine. These correspond to 50 to 60 per cent reductions in perceived noisiness.

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The program objective of QCGAT, standing for Quiet Clean General Aviation Turbofan, is to demonstrate applicability of large turbofan engine technology to smaller general aviation turbofan engines to achieve major noise and pollution reductions while cutting back or maintaining current fuel consumption levels.

One QCGAT engine was developed and tested by the Garrett AiResearch Manufacturing Co. of Phoenix, Ariz. The other is being developed and tested by the AVCO Lycoming Division of Stratford, Conn. Both engine programs are managed by the NASA Lewis Research Center, Cleveland, Ohio.

Another way of indicating quietness of an aircraft is the size of its noise "footprint." This is the ground area below the aircraft's path subject to noise during takeoff and landing. The noise footprint for an aircraft using a QCGAT engine is predicted to be one tenth that of the quietest current business jets.

"Thus, the QCGAT program should clearly demonstrate that noise need not be a major constraint on the future growth of turbofan-powered aircraft in general aviation," said G. Keith Sievers, NASA Lewis QCGAT Project Manager.

"In the past, NASA has directed research efforts in aeronautical propulsion principally toward the commercial or large aircraft field. Now, with the QCGAT program, NASA is extending its research and technology into the small aircraft field, which accounts for 38 per cent of the intercity air passenger load in the United States," said Sievers.

Lewis reported that the noise level reductions predicted are achieved (1) by slowing down the velocity of the engine exhaust and (2) through proper acoustic design of the interior parts of the engine, including the addition of sound absorbing materials to quiet the noise produced by the engine fan, compressor and turbine.

Regarding air pollution, a 54 per cent reduction in carbon monoxide emissions and a 76 per cent reduction in unburned hydrocarbon emissions from current engines are expected for the AiResearch engine. Emission levels from the Lycoming engine are expected to be even lower.

Testing of the AiResearch engine is essentially complete and delivery of the engine was made to Lewis in January. The Lycoming engine is in an early phase of testing with delivery to Lewis expected in July. Both engines will be used by Lewis for further research.

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Note:

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(This information also being released by the NASA Lewis Research Center, Cleveland, Ohio.)

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